

planes that extend parallel to one another and said anode and cathode have a uniform thickness throughout.

REMARKS

Claims 1-8 are pending. By this Amendment, claim 1 is amended. No new matter is presented.

Applicants respectfully appreciate the courtesies extended to Applicants' representative by Examiner Parsons during the personal interview conducted on August 20, 2002.

Entry of this Amendment is proper under 37 CFR § 1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues requiring further search and/or consideration on the part of the Examiner; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

Claims 1-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,667,647 to Suga et al. (hereinafter "Suga") in view of U.S. Patent No. 4,243,508 to Dankese. Claims 6-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Suga in view of Dankese and U.S. Patent No. 5,401,371 to Oshima et al. (hereinafter "Oshima"). Applicants respectfully traverse these rejections.

Pending claim 1 recites a water electrolytic apparatus including a plurality of water electrolytic cells each having a solid polymer electrolyte membrane, an anode, and a cathode. The anode and the cathode are plate shaped and arranged on opposite sides of the electrolyte membrane, respectively. The water electrolytic cells are developed on a hypothetical plane and are electrically connected in series to one another, wherein each of the water electrolytic cell, electrolyte membrane, anode, and cathode are developed on respective hypothetical planes that extend parallel to one another and the anode and cathode have a uniform thickness throughout.

As noted above, pending claim 1 recites each anode and cathode are plate shaped. Page 4, lines 16 and 20 of the originally filed application provide support for the amended language. Plate is defined in *Webster's II New Riverside University Dictionary* as a flat, smooth, relatively thin, rigid body of uniform thickness. A copy of the page defining the term "plate" from the cited reference is attached hereto for the convenience of the Examiner. Furthermore, pending claim 1 recites the polymer electrolytic membrane is solid. Therefore, as explained in the Response dated April 30, 2002, due to the recited structure of the solid polymer electrolyte membrane, the plate shaped anode, and the plate shaped cathode in each water electrolytic cell being developed on respective hypothetical planes that extend parallel to one another, the thickness or height of the water electrolytic cell in a direction that is perpendicular to the hypothetical planes can be made relatively small, thereby making the thickness of the entire water electrolytic apparatus relatively small.

Dankese is applied merely for its teaching of an ion exchange membrane for use in an electrochemical apparatus. Therefore, the ion exchange membrane taught by Dankese replaces the ion exchange film 3 sandwiched by the box shaped wall structures 1,1 disclosed by Suga. However, the box shaped wall structures 1, 1 disclosed by Suga are not plate shaped such that they have a uniform thickness. In particular, each box shaped wall structure 1 disclosed by Suga includes an interior surface area 2 having a framework 4 that is coated with metal. The framework 4 projects from an interior surface of the box shaped wall structures 1 and is formed of a plurality of intersecting horizontal and vertical members which divide the interior space of the box shaped wall structures into a series of rectangular spaces. Notches 5 are formed in the horizontal and vertical members and are formed in a central portion of an edge of each interior wall forming the rectangular spaces which are formed by the horizontal and vertical members. See column 2, line 57 to column 3, line 1 and Figures 1(A) and 2 of Suga.

Furthermore, the framework disposed in the interior of each box-shaped wall structure forms an irregular surface which is coated with a metal film. See column 1, lines 45-47. The "irregular surface" of Suga is not plate shaped as are the anode and cathodes recited by pending claim 1.

Put simply, Suga does not disclose plate shaped anodes and cathodes having uniform thickness, but rather specifically discloses box shaped wall structures that have a varying thickness and are formed by the structural arrangement of the horizontal and

vertical members comprising the interior framework 4 and the notches 5 provided therein wherein the interior of each box-shaped wall structure has an irregular surface.

To establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the applied art of record (emphasis added). See In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See M.P.E.P. 2143.03.

As explained above, the invention recited by pending claim 1 of this application clearly states that the anode and cathode are plate shaped and have a uniform thickness. The claimed structural arrangement, when combined with the fact that the polymer electrolyte membrane is solid (i.e., flat and of a uniform thickness throughout), the overall thickness or height of the water electrolytic cell in a direction that is perpendicular to the hypothetical planes can be made relatively small, thereby making the overall thickness of the entire water electrolytic apparatus relatively small as well.

Suga clearly does not disclose or suggest the wall structures being plate shaped such that they have uniform thickness. Rather, as explained above, Suga discloses a somewhat intricate framework formed from connected horizontal and vertical members with notches formed therein resulting in an irregular surface. Therefore, the proposed Suga/Dankese combination does not disclose all of the claim features recited by pending claim 1.

Accordingly, the Office Action has not established a *prima facie* case of obviousness. For the above provided reasons, Applicants respectfully submit that pending claim 1 is not rendered obvious under 35 U.S.C. § 103 by Suga and Dankese

as the applied references do not teach each claimed feature of rejected claim 1. Therefore, claim 1 should be deemed allowable.

Claims 2-8 depend from claim 1. If an independent claim is nonobviousness under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, it is respectfully submitted that these seven (7) dependent claims should be deemed allowable for the same reasons claim 1 is allowable, as well as for the additional subject matter recited therein.

Withdrawal of the rejections is respectfully requested.

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of claims 1-8, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 107348-00096.**

Respectfully submitted,  
ARENT FOX KINTNER PLOTKIN & KAHN PLLC



Murat Ozgu  
Attorney for Applicants  
Registration No. 44,275

Enclosures: Marked Up Version of Amended Claim 1  
Page 900 from Webster's II New Riverside University Dictionary

1050 Connecticut Avenue, NW, Suite 400  
Washington, DC 20036-5339  
Telephone: (202) 857-6000

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**Marked Up Version of Amended Claim 1**

**IN THE CLAIMS:**

Please amend claim 1 as follows:

1. (Amended Twice) A water electrolytic apparatus comprising a plurality of water electrolytic cells each having a solid polymer electrolyte membrane, an anode, and a cathode, the anode and the cathode being plate shaped and arranged on opposite sides of said electrolyte membrane, respectively and said water electrolytic cells being developed on a hypothetical plane and electrically connected in series to one another, wherein each of said water electrolytic cell, said solid polymer [electrolytic] electrolyte membrane, said anode, and said cathode are developed on respective hypothetical planes that extend parallel to one another and said anode and cathode have a uniform thickness throughout.

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